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THE UNITED STATES
STRATEGIC BOMBING SURVEY

Report. Pacific War. No. 11

SHODA ENGINEERING COMPANY

(Shoda Seisakujo)

CORPORATION REPORT NO. XVI

(Components)

AIRCRAFT DIVISION

Date of Survey:

31 October 1945

1 September 1946

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EXHIBIT OF DOCUMENTS

1940

This report was written primarily for the use of the U. S. Strategic Bombing Survey in the preparation of further reports of a more comprehensive nature. Any conclusions or opinions expressed in this report must be considered as limited to the specific material covered and as subject to further interpretation in the light of further studies conducted by the Survey.

FOREWORD

The United States Strategic Bombing Survey was established by the Secretary of War on 3 November 1944, pursuant to a directive from the late President Roosevelt. Its mission was to conduct an impartial and expert study of the effects of our aerial attack on Germany, to be used in connection with air attacks on Japan and to establish a basis for evaluating the importance and potentialities of air power as an instrument of military strategy, for planning the future development of the United States armed forces, and for determining future economic policies with respect to the national defense. A summary report and some 200 supporting reports containing the findings of the Survey in Germany have been published.

On 15 August 1945, President Truman requested that the Survey conduct a similar study of the effects of all types of air attack in the war against Japan, submitting reports in duplicate to the Secretary of War and to the Secretary of the Navy. The officers of the Survey during its Japanese phase were:

Franklin D'Olier, Chairman.

Paul H. Nitze, Henry C. Alexander, Vice Chairmen.

Harry L. Bowman,

J. Kenneth Galbraith,

Rensis Likert,

Frank A. McNamee, Jr.,

Fred Searls, Jr.,

Monroe E. Spaght,

Dr. Lewis R. Thompson,

Thoedore P. Wright, Directors.

Walter Wilds, Secretary.

The Survey's complement provided for 300 civilians, 350 officers, and 500 enlisted men. The military segment of the organization was drawn from the Army to the extent of 60 percent, and from the Navy to the extent of 40 percent. Both the Army and the Navy gave the Survey all possible assistance in furnishing men, supplies, transport, and information. The Survey operated from headquarters established in Tokyo early in September 1945, with subheadquarters in Nagoya, Osaka, Hiroshima and Nagasaki, and with mobile teams operating in other parts of Japan, the islands of the Pacific, and the Asiatic mainland.

It was possible to reconstruct much of wartime Japanese military planning and execution, engagement by engagement, and campaign by campaign, and to secure reasonably accurate statistics on Japan's economy and war production, plant by plant, and industry by industry. In addition, studies were conducted on Japan's over-all strategic plans and the background of her entry into the war, the internal discussions and negotiations leading to her acceptance of unconditional surrender, the course of health and morale among the civilian population, the effectiveness of the Japanese civilian defense organization, and the effects of the atomic bombs. Separate reports will be issued covering each phase of the study.

The Survey interrogated more than 700 Japanese military, government, and industrial officials. It also recovered and translated many documents which not only have been useful to the Survey, but also will furnish data valuable for other studies. Arrangements have been made to turn over the Survey's files to the Central Intelligence Group, through which they will be available for further examination and distribution.

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THE CORPORATION AND ITS IMPORTANCE IN THE AIRCRAFT INDUSTRY

Introduction

The Shoda Engineering Works (Shoda Seisakujo), a small independent manufacturing company of minor importance in the Japanese aircraft industry, consisted of a single manufacturing unit located at Mitaka Township, in the Tokyo Prefecture, about 10 miles west of the Imperial Palace (Appendix A).

Shoda produced cylinder heads for less than 5 percent of all aircraft engines made between July 1943 and August 1945. Specifically, it cast, trimmed, lined, and rough-finished cylinder heads for the Homare and Tempu engines.

In June and July 1945, after the nearby Musashi Works of the Nakajima Corporation was destroyed by bombing, Shoda heat-treated (quenched and annealed) connecting rods for Nakajima. During this period about 22,400 connecting rods were thus processed.

In the non-aircraft field, Shoda manufactured various-sized nuts and bolts, 2-horsepower internal combustion engines used for portable radio sets, and 13-horsepower outboard and 40-horsepower inboard engines for marine craft.

The company was established on 3 December 1933. Prior to July 1942, production was limited to the non-aircraft field mentioned above. In July 1942 orders were received from the Munitions Ministry to establish a cylinder head casting plant in addition to the then existing shops. Construction was completed and work began in this plant on the first Nakajima order in July 1943.

Government controls were largely localized. The Engine Section of the Aircraft Production Board of the Munitions Ministry allocated materials and production quotas; these details were administered by the local Kanto and Shinetsu District Offices of the Munitions Ministry. Labor requirements were obtained from the Labor Section of the Welfare Department.

Organization and Operation

The Shoda Company was individually owned and operated by Jukichi Shoda. Capitalization, at the time of surrender, was about 4,000,000 yen. The plant occupied a site of about 1,234,000 square feet, of which 219,000 square feet was building area.

Industrial equipment consisted of 451 machines, of the following categories:

Machine tools.....	305
Electrical equipment.....	35
Pneumatic machinery.....	32
Metallurgical furnaces.....	55
Testing equipment.....	24

Employment in the Shoda Company increased from about 800 in January 1943 to 1,850 at the time of the surrender. These totals include all employees—no detailed break-down data for aircraft and non-aircraft operations were available. However, toward the end of the war, about 32 percent of the total employees were engaged in the manufacture of cylinder heads. Of this amount, about 28 percent worked on the 1930 to 0730 night shift and 72 percent worked on the 0730 to 1930 day shift.

The use of student labor was begun in April 1944; the proportion averaged about 23 percent of the total. Soldier labor was used only in the final 4 months beginning May 1945, varying from 1 to 3 percent of the total employment (Appendices B and B-1).

The Dispersal Program

Somewhat prior to the Munition Ministry's 4 April 1945 dispersal order to the Japanese aircraft industry, Shoda had moved 36 sets of machine tools to the nearby Yamamura Industry Company's plant at Mure, in Mitaka Township. Cylinder head finishing was carried out there. Thirty-seven sets of machine tools were moved to the Jindai Wood Works, at the village of Jindai in Tokyo Prefecture. Machine-finishing of the

radio set internal combustion engines was done there.

As a result of the order of 4 April 1945, Shoda purchased a 60-acre tract of land at Shinkoji, in Tsurukawa village, about 9 miles to the south (Appendix A). Shoda's plans were to move the entire plant to a combined underground-camouflaged factory at that location. Construction was begun in April, but until the surrender, only the access road had been repaired, about 100 yards of tunnel dug, and 84 machine tools moved to the dispersal site.

THE AIR ATTACKS

Attack on Plant

The Shoda Engineering Works was neither selected nor attacked as a primary target. The plant, however, sustained one air attack, an incendiary raid at 2230 hours on 25 May 1945, which was part of an area attack. Two lumber mills were completely burned and two woodworking machines and some semifinished and finished material stocks were destroyed. The company gymnasium was damaged. However, no part of the company's cylinder head production shops was hit or otherwise affected.

Attacks on Urban Areas

Attacks against the Tokyo-Yokohama urban areas increased the difficulties which the company experienced in obtaining raw materials, the supply of which had already begun to be erratic as early as January 1944 (Appendix C-1, 2, 3, 4). Shortages of critical items (aluminum alloys, magnesium, and copper) were felt by the aircraft industry before the air raids on Japan Proper but the disruption of transportation delayed the delivery of what supplies existed and precipitated the decline in production. From January 1944 to the end of the war, only about 40 percent of the requirements for these items were received by Shoda (Table 1).

TABLE 1.—Raw material shortages (January 1944–August 1945)

	Aluminum and aluminum alloys	Magnesium	Copper
	Tons	Tons	Tons
Required	2,478.4	34.3	93.0
Received	890.0	15.6	42.0
Shortage	1,588.4	18.7	51.0

NOTE.—Amount received included materials required and used for the manufacture of nonaircraft products; no detailed break-down of this data was available. The item "required," however, was amount needed only for cylinder head manufacture.

PRODUCTION STATISTICS

Maximum productive capacity of Homare cylinder heads, from inception of casting operations in July 1943, rose steadily from 400 per month until a constant monthly figure of 4,000 was reached in July 1944. Capacity for the Tempu Ha23 cylinder head rose from an initial 200 per month in May 1944, to 400 in August 1944, far below planned output (Appendix D-1, 2, 3).

Government orders for Homare cylinder heads were less than plant capacity until April 1944, and except for a slight excess demand during the following 3 months, very closely approximated the capacity thereafter. In the case of the Tempu head, government demands grossly exceeded capacity of manufacture at all times. In June and July of 1944, this excess was more than 650 percent of plant capacity (Appendix D-2).

Actual production of the Homare head increased steadily until July 1944, when a maximum of 4,032 units were made, and gradually declined thereafter. Actual production reached the planned and capacity level in only that 1 month (Appendix D-1). This difference between planned and actual production was due to (a) failure of the Munitions Ministry to provide promised blowers and melting and drying furnaces, and (b) shortages in supply of aluminum and aluminum alloy stocks.

The production project of the Tempu head was a complete and dismal failure because machine tools and equipment promised by the Ministry of Munitions could not be obtained. This project accordingly was discontinued after December 1944. The Tempu cylinder heads also were principally for trainer planes and due to the increasing need for larger engines, this factor may have entered in to bring about the decision to abandon its production.

A contributing factor to production slow-downs was the increasingly frequent air attack alarms. During these alerts, workers sought shelter and work was suspended.

EVALUATION OF PRE-ATTACK INTELLIGENCE

Joint Target Group information on the Shoda Engineering Works was uncertain and incomplete. Joint Target Group reported: (a) trainer aircraft and aircraft engines produced by the

Shoda Aircraft Company but, in the same sentence, qualified this statement by suggesting only parts manufacture and subassembly operations, (b) the Mitaka Aircraft Company and Nakajima Experimental Station at this approximate location, and (c) Mitsubishi taking over the Shoda plant.

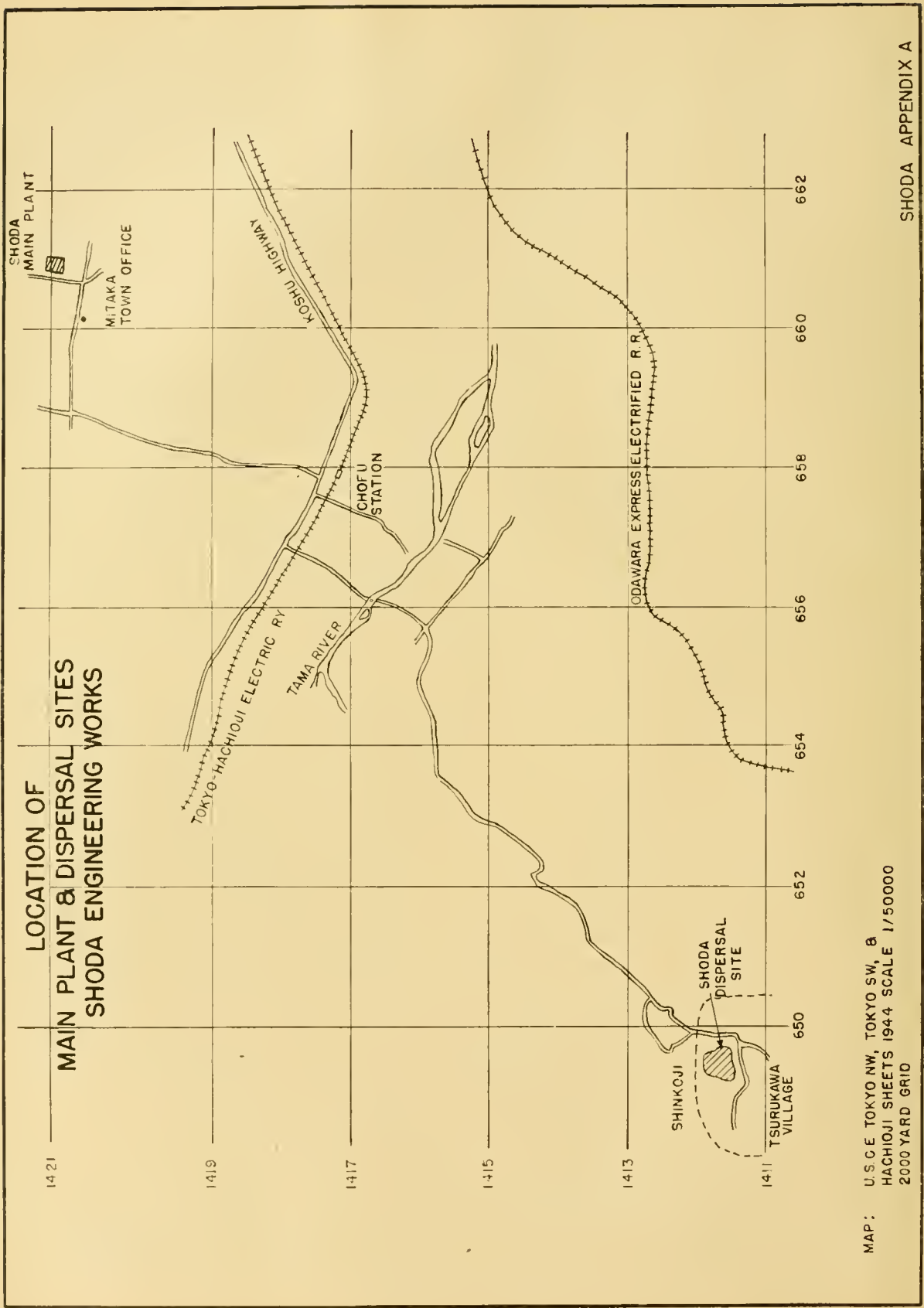
The following findings were determined to be correct, in contrast to the intelligence data stated above: (a) No trainer aircraft, aircraft engines, or subassemblies were produced by Shoda. (b) Mitaka Aircraft Company was an independent organization, located adjacently to the Shoda plant. Air Photo of Joint Target Group Information Sheet shows both companies located as one unit. (c) There was no Nakajima Experimental Station located at or near this site. (d) Mitsubishi had no interests in the Shoda Company.

Although this Joint Target Group Information Sheet was incorrect in its data as to exact location and activities of Shoda, no serious omission resulted since it correctly analyzed Shoda as occupying a relatively unimportant position in the aircraft industry.

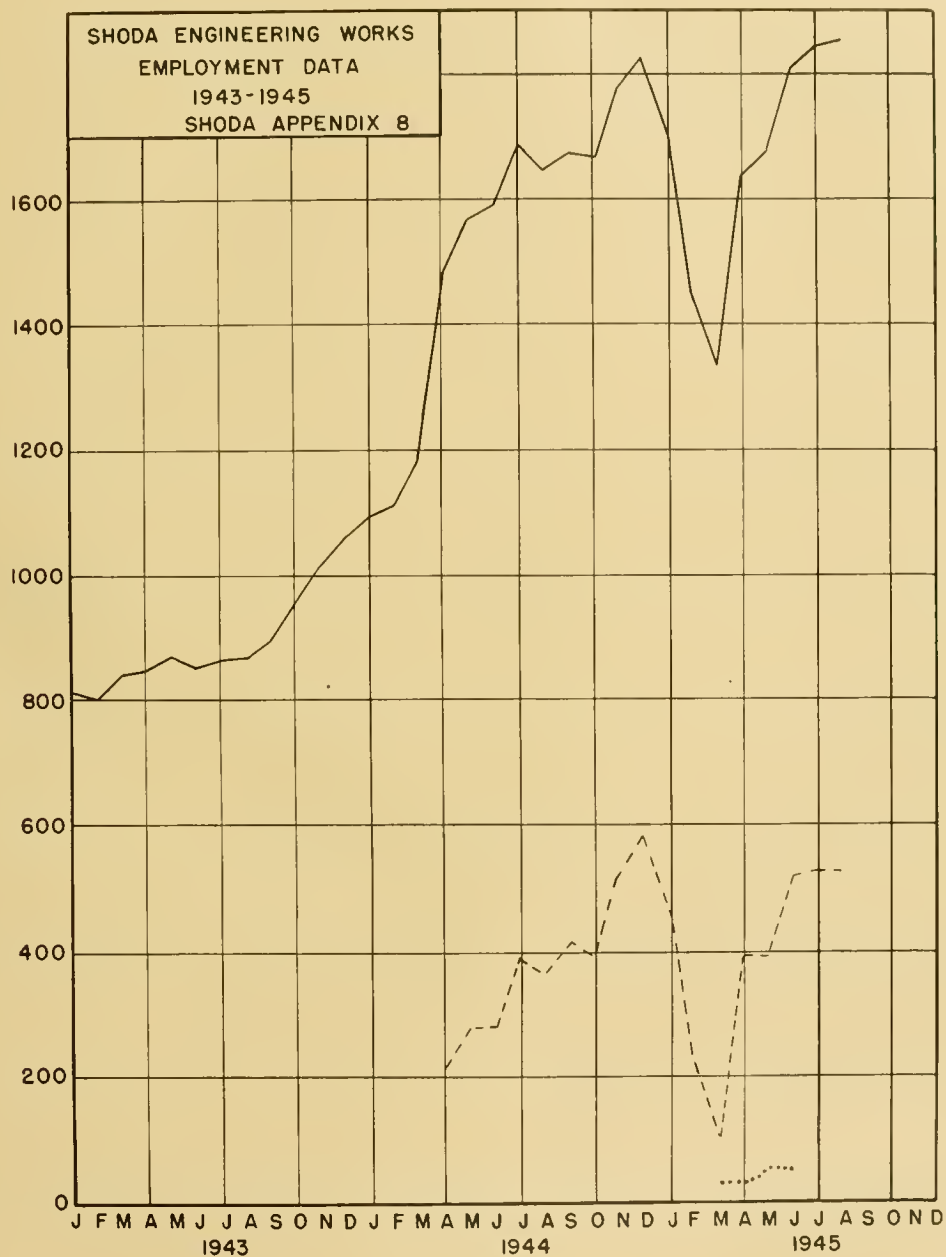
SHODA, APPENDIX B-1

Employment data

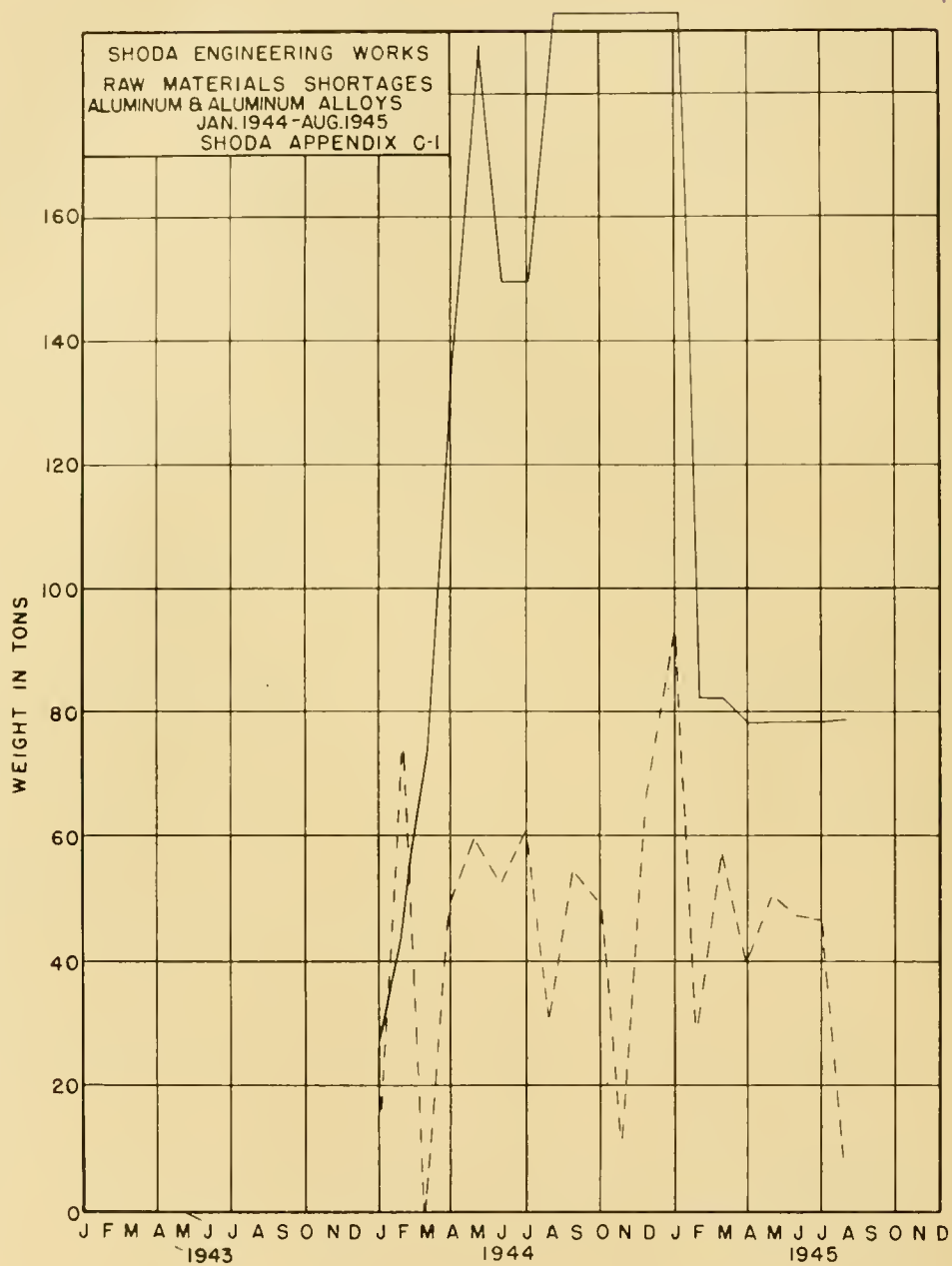
	Regulars	Students	Soldiers	Total
<i>1943</i>				
January	813			813
February	804			804
March	846			846
April	855			855
May	868			868
June	859			859
July	866			866
August	868			868
September	899			899
October	958			958
November	1,013			1,013
December	1,063			1,063
<i>1944</i>				
January	1,095			1,095
February	1,116			1,116
March	1,187			1,187
April	1,276	210		1,486
May	1,288	280		1,568
June	1,312	280		1,592
July	1,390	390		1,690
August	1,280	379		1,659
September	1,259	420		1,679
October	1,270	400		1,670
November	1,259	529		1,779
December	1,247	585		1,832
<i>1945</i>				
January	1,230	480		1,710
February	1,217	249		1,467
March	1,234	100		1,334
April	1,240	400		1,640
May	1,250	490	27	1,677
June	1,265	529	27	1,812
July	1,267	530	48	1,845
August	1,275	530	48	1,853



MAP: U.S.C.E. TOKYO NW, TOKYO SW, &
HACHIOJI SHEETS 1944 SCALE 1/50000
2000 YARD GRID



LEGEND
 — TOTAL EMPLOYEES
 --- STUDENTS
 SOLDIERS

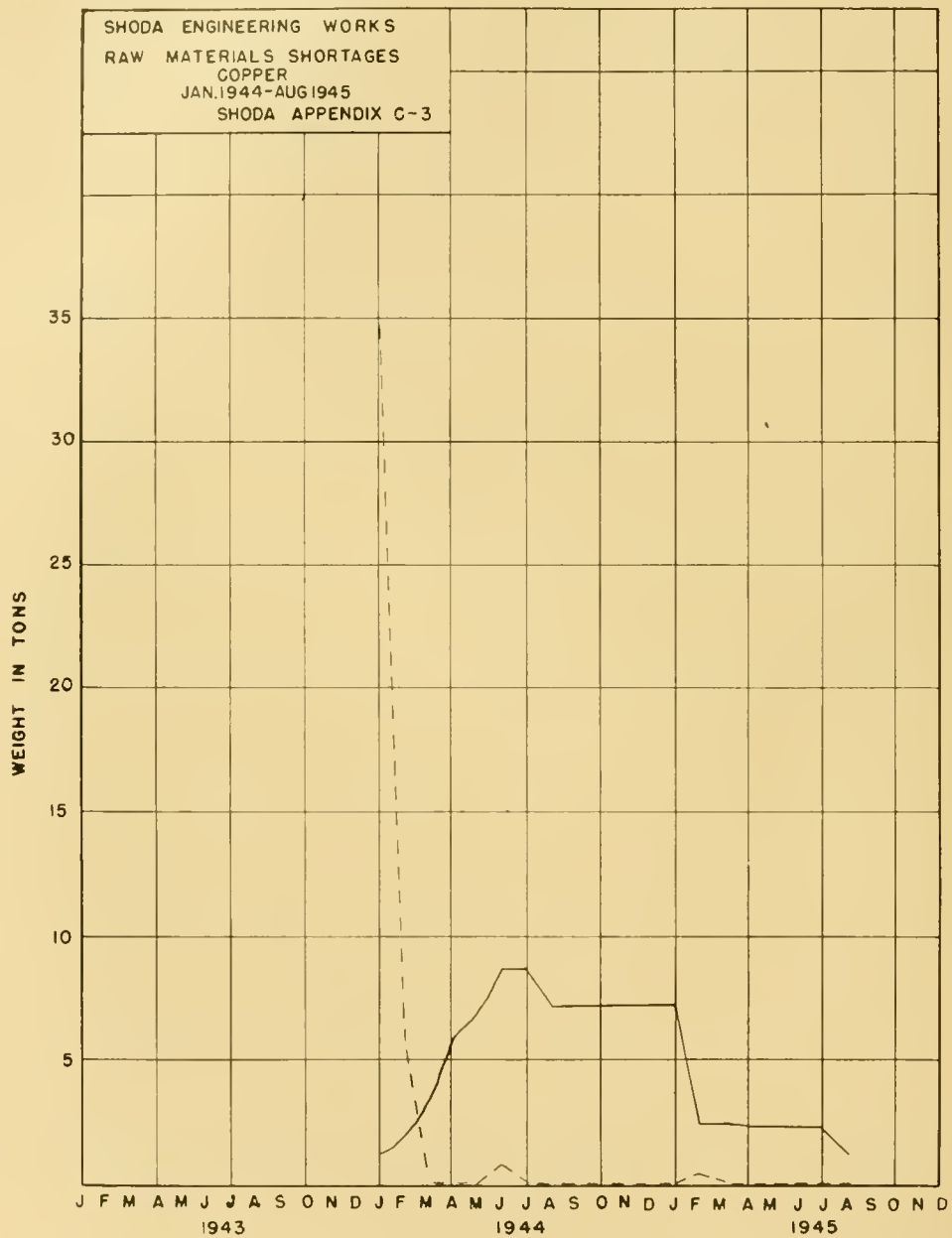


LEGEND
— REQUIRED
--- RECEIVED

SHODA ENGINEERING WORKS
 RAW MATERIALS SHORTAGES
 MAGNESIUM
 JAN. 1944 - AUG. 1945
 SHODA APPENDIX C-2



LEGEND
 — REQUIRED
 - - - RECEIVED

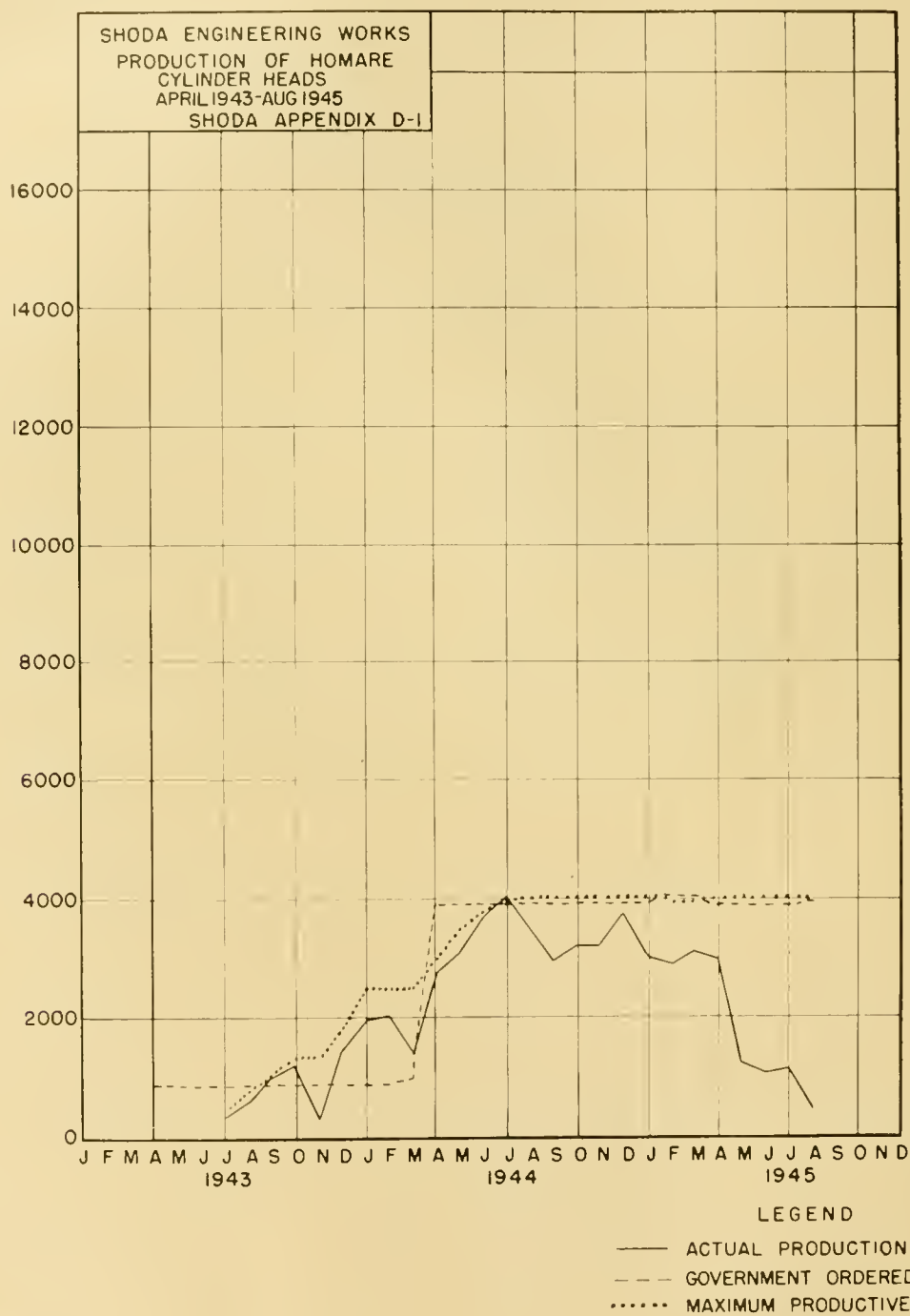


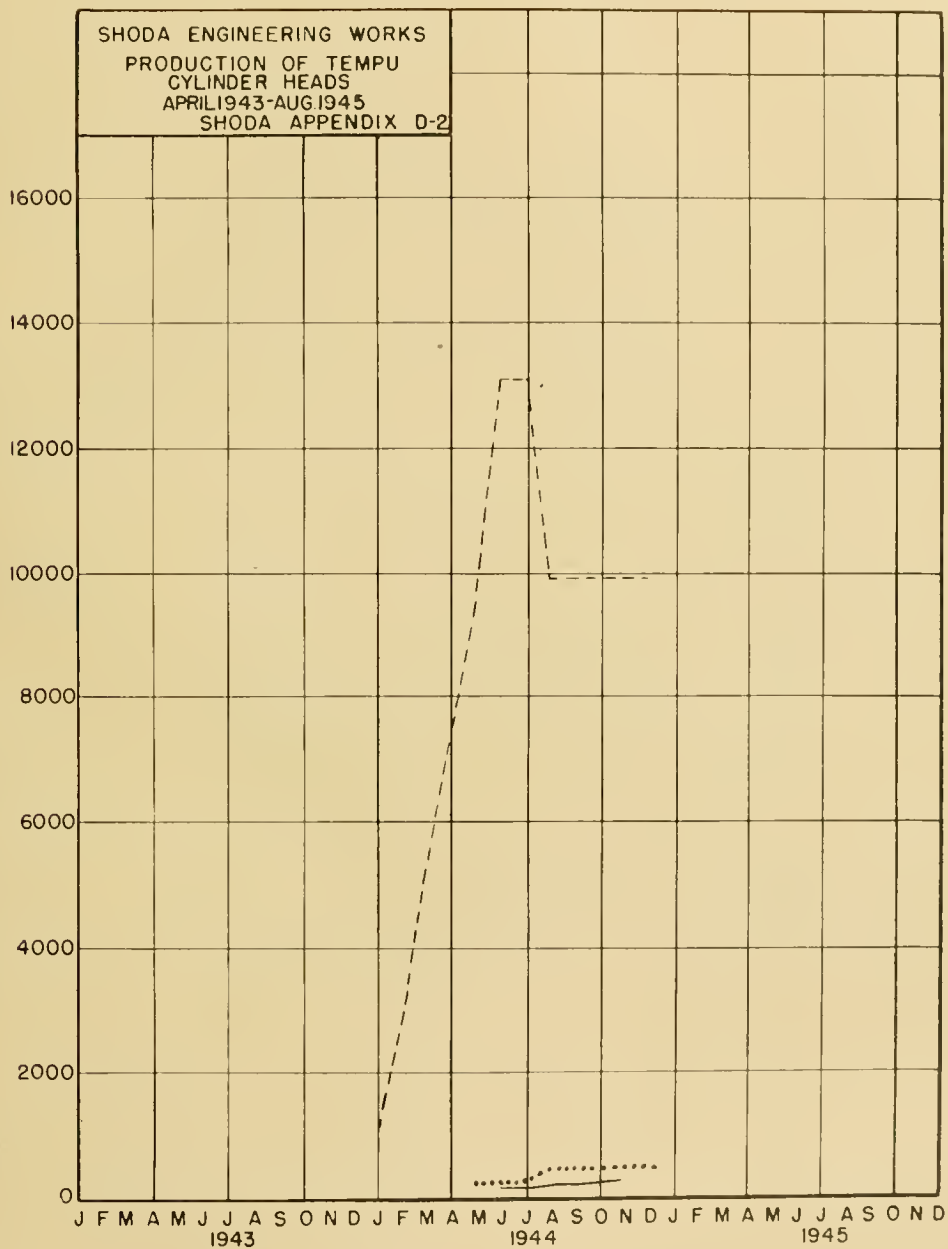
LEGEND
— REQUIRED
--- RECEIVED

SHODA, APPENDIX C-4

Raw Materials Shortages

	Aluminum and aluminum alloys—		Magnesium—		Copper—	
	Re- quired	Re- ceived	Re- quired	Re- ceived	Re- quired	Re- ceived
<i>1944</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>
January.....	22.1	10.3	.3	0	1.1	34.8
February.....	44.7	73.5	.7	0	1.8	6.2
March.....	73.1	0	1.1	2.2	3.1	0
April.....	136.3	48.7	2.1	.1	5.8	0
May.....	187.7	59.6	2.5	0	6.8	0
June.....	149.6	52.8	3.2	0	8.6	.7
July.....	149.6	60.3	3.2	0	8.6	0
August.....	193.2	31.1	2.6	11.1	7.1	0
September.....	193.2	54.3	2.6	0	7.1	0
October.....	193.2	49.2	2.6	2.2	7.1	0
November.....	193.2	11.1	2.6	0	7.1	0
December.....	193.2	70.2	2.6	0	7.1	0
<i>1945</i>						
January.....	193.2	92.2	2.6	0	7.1	0
February.....	82.2	28.9	1.0	0	2.3	.3
March.....	82.2	56.5	1.0	0	2.3	0
April.....	78.2	40.2	.8	0	2.2	0
May.....	78.2	50.8	.8	0	2.2	0
June.....	78.2	47.8	.8	0	2.2	0
July.....	78.2	46.9	.8	0	2.2	0
August.....	78.9	5.6	.4	0	1.1	0
Total.....	2,478.4	890.0	34.3	15.6	92.9	42.0





LEGEND

— ACTUAL PRODUCTION

- - - GOVERNMENT ORDERED PRODUCTION

..... MAXIMUM PRODUCTIVE CAPACITY

SHODA, APPENDIX D-3

Homore & Tempu Cylinder Head Production, Shoda Engineering Works, July 1943-August 1945

	Homare			Tempu		
	Maximum capacity	Government ordered	Actual production	Maximum capacity	Government ordered	Actual production
<i>1943</i>						
July.....	400	900	300	-----	-----	-----
August.....	800	900	600	-----	-----	-----
September.....	1,000	900	1,000	-----	-----	-----
October.....	1,300	900	1,200	-----	-----	-----
November.....	1,300	900	327	-----	-----	-----
December.....	1,800	900	1,510	-----	-----	-----
<i>1944</i>						
January.....	2,500	900	1,965	-----	900	-----
February.....	2,500	900	2,039	-----	2,700	-----
March.....	2,500	1,000	1,370	-----	5,220	-----
April.....	3,000	3,950	2,720	-----	7,380	-----
May.....	3,500	3,950	3,100	200	9,450	-----
June.....	3,800	3,950	3,718	200	13,050	-----
July.....	4,000	3,950	4,032	200	13,050	104
August.....	4,000	3,030	3,030	400	9,900	92
September.....	4,000	3,950	2,974	400	9,900	150
October.....	4,000	3,950	3,220	400	9,900	170
November.....	4,000	3,950	3,225	400	9,900	200
December.....	4,000	3,950	2,749	400	9,900	210
<i>1945</i>						
January.....	4,000	3,950	2,000	-----	-----	-----
February.....	4,000	4,050	1,900	-----	-----	-----
March.....	4,000	4,050	2,070	-----	-----	-----
April.....	4,000	3,900	1,970	-----	-----	-----
May.....	4,000	3,900	1,200	-----	-----	-----
June.....	4,000	3,900	1,050	-----	-----	-----
July.....	4,000	4,000	1,113	-----	-----	-----
August.....	4,000	4,000	415	-----	-----	-----

UNITED STATES STRATEGIC BOMBING SURVEY

LIST OF REPORTS

The following is a bibliography of reports resulting from the Survey's studies of the European and Pacific wars. Certain of these reports may be purchased from the Superintendent of Documents at the Government Printing Office, Washington, D. C. Permission to examine the remaining reports may be had by writing to the Headquarters of the Survey at Gravelly Point, Washington 25, D. C.

European War

OFFICE OF THE CHAIRMAN

- 1 The United States Strategic Bombing Survey: Summary Report (European War)
- 2 The United States Strategic Bombing Survey: Overall Report (European War)
- 3 The Effects of Strategic Bombing on the German War Economy

AIRCRAFT DIVISION

(By Division and Branch)

- 4 Aircraft Division Industry Report
- 5 Inspection Visits to Various Targets (Special Report)

Airframes Branch

- 6 Junkers Aircraft and Aero Engine Works, Dessau, Germany
- 7 Erla Maschinenwerke G m b H, Heiterblick, Germany
- 8 A T G Maschinenbau, G m b H, Leipzig (Mockau), Germany
- 9 Gothaer Waggonfabrik, A G, Gotha, Germany
- 10 Focke Wulf Aircraft Plant, Bremen, Germany
- 11 Messerschmitt A G, Augsburg, Germany

Over-all Report
Part A
Part B
Appendices I, II, III
- 12 Dernier Works, Friedrichshafen & Munich, Germany
- 13 Gerhard Fieseler Werke G m b H, Kassel, Germany
- 14 Wiener Neustaedter Flugzeugwerke, Wiener Neustadt, Austria

Aero Engines Branch

- 15 Bussing NAG Flugmotorenwerke G m b H, Brunswick, Germany
- 16 Mittel-Deutsche Motorenwerke G m b H, Taucha, Germany
- 17 Bavarian Motor Works Inc, Eisenach & Durrerhof, Germany
- 18 Bayerische Motorenwerke A G (BMW) Munich, Germany
- 19 Henschel Flugmotorenwerke, Kassel, Germany

Light Metal Branch

- 20 Light Metals Industry

Part I, Aluminum of Germany
Part II, Magnesium

- 21 Vereinigte Deutsche Metallwerke, Hildesheim, Germany
- 22 Metallgussgesellschaft G m b H, Leipzig, Germany
- 23 Aluminiumwerk G m b H, Plant No. 2, Bitterfeld, Germany
- 24 Gebrueder Giulini G m b H, Ludwigshafen, Germany
- 25 Luftschiffbau Zeppelin G m b H, Friedrichshafen on Bodensee, Germany
- 26 Wieland Werke A G, Ulm, Germany
- 27 Rudolph Rautenbach Leichtmetallgiessereien, Solingen, Germany
- 28 Lippewerke Vereinigte Aluminiumwerke A G, Lunen, Germany
- 29 Vereinigte Deutsche Metallwerke, Hedderheim, Germany
- 30 Duerener Metallwerke A G, Duren Wittenau-Berlin & Waren, Germany

AREA STUDIES DIVISION

- 31 Area Studies Division Report
- 32 A Detailed Study of the Effects of Area Bombing on Hamburg
- 33 A Detailed Study of the Effects of Area Bombing on Wuppertal
- 34 A Detailed Study of the Effects of Area Bombing on Dusseldorf
- 35 A Detailed Study of the Effects of Area Bombing on Solingen
- 36 A Detailed Study of the Effects of Area Bombing on Remscheid.
- 37 A Detailed Study of the Effects of Area Bombing on Darmstadt
- 38 A Detailed Study of the Effects of Area Bombing on Lubeck
- 39 A Brief Study of the Effects of Area Bombing on Berlin, Augsburg, Bochum, Leipzig, Hagen, Dortmund, Oberhausen, Schweinfurt, and Bremen

CIVILIAN DEFENSE DIVISION

- 40 Civilian Defense Division—Final Report
- 41 Cologne Field Report
- 42 Bonn Field Report
- 43 Hanover Field Report
- 44 Hamburg Field Report—Vol I, Text; Vol II, Exhibits
- 45 Bad Oldesloe Field Report
- 46 Augsburg Field Report
- 47 Reception Areas in Bavaria, Germany

EQUIPMENT DIVISION

Electrical Branch

- 48 German Electrical Equipment Industry Report
- 49 Brown Boveri et Cie, Mannheim Käfertal, Germany

Optical and Precision Instrument Branch

- 50 Optical and Precision Instrument Industry Report

Abrasives Branch

- 51 The German Abrasive Industry
- 52 Mayer and Schmidt, Offenbach on Main, Germany

Anti-Friction Branch

- 53 The German Anti-Friction Bearings Industry

Machine Tools Branch

- 54 Machine Tools & Machinery as Capital Equipment
- 55 Machine Tool Industry in Germany
- 56 Herman Kolb Co, Cologne, Germany
- 57 Collet and Engelhard, Offenbach, Germany
- 58 Naxos Union, Frankfurt on Main, Germany

MILITARY ANALYSIS DIVISION

- 59 The Defeat of the German Air Force
- 60 V-Weapons (Crossbow) Campaign
- 61 Air Force Rate of Operation
- 62 Weather Factors in Combat Bombardment Operations in the European Theatre
- 63 Bombing Accuracy, USAAF Heavy and Medium Bombers in the ETO
- 64 Description of RAF Bombing
- 64a The Impact of the Allied Air Effort on German Logistics

MORALE DIVISION

- 64b The Effects of Strategic Bombing on German Morale

Medical Branch

- 65 The Effect of Bombing on Health and Medical Care in Germany

MUNITIONS DIVISION

Heavy Industry Branch

- 66 The Coking Industry Report on Germany
- 67 Coking Plant Report No. 1, Sections A, B, C, & D
- 68 Gutehoffnungshuette, Oberhausen, Germany
- 69 Friedrich-Alfred Huette, Rheinhausen, Germany
- 70 Neunkirchen Eisenwerke A G, Neunkirchen, Germany
- 71 Reichswerke Hermann Goering A G, Hallendorf, Germany
- 72 August Thyssen Huette A G, Hamborn, Germany
- 73 Friedrich Krupp A G, Borbeck Plant, Essen, Germany
- 74 Dortmund Hoerder Huettenverein, A G, Dortmund, Germany
- 75 Hoesch A G, Dortmund, Germany
- 76 Bochumer Verein fuer Gusstahlfabrikation A G, Bochum, Germany

Motor Vehicles and Tanks Branch

- 77 German Motor Vehicles Industry Report
- 78 Tank Industry Report
- 79 Daimler Benz A G, Unterturkheim, Germany
- 80 Renault Motor Vehicles Plant, Billancourt, Paris
- 81 Adam Opel, Russelsheim, Germany
- 82 Daimler Benz-Gaggenau Works, Gaggenau, Germany
- 83 Maschinenfabrik Augsburg-Nurnberg, Nurnberg, Germany
- 84 Auto Union A G, Chemnitz and Zwickau, Germany
- 85 Henschel & Sohn, Kassel, Germany
- 86 Maybach Motor Works, Friedrichshafen, Germany
- 87 Voigtlander, Maschinenfabrik A G, Plauen, Germany
- 88 Volkswagenwerke, Fallersleben, Germany
- 89 Bussing NAG, Brunswick, Germany
- 90 Muehlenbau Industrie A G (Mlag) Brunswick, Germany
- 91 Friedrich Krupp Grusonwerke, Magdeburg, Germany

Submarine Branch

- 92 German Submarine Industry Report
- 93 Maschinenfabrik Augsburg-Nurnberg A G, Augsburg, Germany
- 94 Blohm and Voss Shipyards, Hamburg, Germany
- 95 Deutsche Werke A G, Kiel, Germany
- 96 Deutsche Schiff und Maschinenbau, Bremen, Germany
- 97 Friedrich Krupp Germaniawerft, Kiel, Germany
- 98 Howaldtswerke A G, Hamburg, Germany
- 99 Submarine Assembly Shelter, Farge, Germany
- 100 Bremer Vulkan, Vegesack, Germany

Ordinance Branch

- 101 Ordnance Industry Report
- 102 Friedrich Krupp Grusonwerke A G Magdeburg, Germany
- 103 Bochumer Verein fuer Gusstahlfabrikation A G, Bochum, Germany
- 104 Henschel & Sohn, Kassel, Germany
- 105 Rheinmetall-Borsig, Dusseldorf, Germany
- 106 Hermann Goering Werke, Braunschweig, Hallendorf, Germany
- 107 Hannoverische Maschinenbau, Hanover, Germany
- 108 Gusstahlfabrik Friedrich Krupp, Essen, Germany

OIL DIVISION

- 109 Oil Division, Final Report
- 110 Oil Division, Final Report, Appendix
- 111 Powder, Explosives, Special Rockets and Jet Propellants, War Gases and Smoke Acid (Ministerial Report #1)
- 112 Underground and Dispersal Plants in Greater Germany
- 113 The German Oil Industry, Ministerial Report Team 78
- 114 Ministerial Report on Chemicals

Oil Branch

- 115 Ammoniakwerke Merseburg G m b H, Leuna, Germany—2 Appendices
- 116 Braunkohle Benzin A G, Zeitz and Bohlen, Germany
- 117 Wintershall A G, Luetzkendorf, Germany
- 117 Ludwigshafen-Opbau Works of I G Farbenindustrie A G, Ludwigshafen, Germany
- 118 Ruhroel Hydrogenation Plant, Bottrop-Boy, Germany. Vol. I, Vol II
- 119 Rhenania Ossag Mineraloelwerke A G, Harburg Refinery, Hamburg, Germany
- 120 Rhenania Ossag Mineraloelwerke A G, Grasbrook Refinery, Hamburg, Germany
- 121 Rhenania Ossag Mineraloelwerke A G, Wilhelmsburg Refinery, Hamburg, Germany
- 122 Gewerkschaft Victor, Castrop-Rauxel, Germany, Vol I & Vol II
- 123 Europaeische Tanklager und Transport A G, Hamburg, Germany
- 124 Ebano Asphalt Werke A G, Harburg Refinery, Hamburg, Germany
- 125 Meerbeck Rheinpreussen Synthetic Oil Plant—Vol I & Vol II

Rubber Branch

- 126 Deutsche Dunlop Gummi Co., Hanau on Main, Germany
- 127 Continental Gummiwerke, Hanover, Germany
- 128 Huels Synthetic Rubber Plant
- 129 Ministerial Report on German Rubber Industry

Propellants Branch

- 130 Elektrochemischewerke, Munich, Germany
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